

=> fil reg

FILE 'REGISTRY' ENTERED AT 07:30:44 ON 04 NOV 2009
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STRUCTURE FILE UPDATES: 2 NOV 2009 HIGHEST RN 1190920-68-3
 DICTIONARY FILE UPDATES: 2 NOV 2009 HIGHEST RN 1190920-68-3

New CAS Information Use Policies, enter HELP USAGETERMS for details.

TSCA INFORMATION NOW CURRENT THROUGH June 26, 2009.

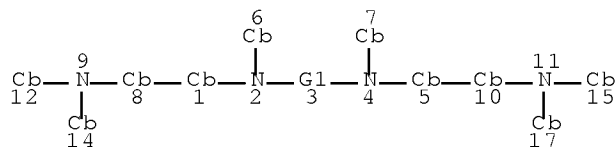
Please note that search-term pricing does apply when
 conducting SmartSELECT searches.

REGISTRY includes numerically searchable data for experimental and
 predicted properties as well as tags indicating availability of
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 on property searching in REGISTRY, refer to:

<http://www.cas.org/support/stngen/stdoc/properties.html>

=> d sta que 128

L15 STR



REP G1=(3-4) CB

NODE ATTRIBUTES:

DEFAULT MLEVEL IS ATOM

DEFAULT ECLEVEL IS UNLIMITED

GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED

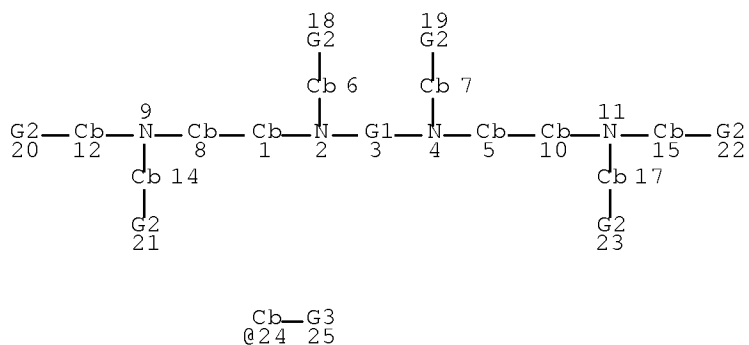
NUMBER OF NODES IS 15

STEREO ATTRIBUTES: NONE

L19 SCR 1995 AND 1846

L22 54 SEA FILE=REGISTRY SSS FUL L15 AND L19

L26 STR



REP G1=(3-4) CB
 VAR G2=H/AK/ID/CB/24

VAR G3=AK/ID

NODE ATTRIBUTES:

DEFAULT MLEVEL IS ATOM

DEFAULT ECLEVEL IS UNLIMITED

GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED

NUMBER OF NODES IS 23

STEREO ATTRIBUTES: NONE

L28 25 SEA FILE=REGISTRY SUB=L22 CSS FUL L26

100.0% PROCESSED 54 ITERATIONS (3 INCOMPLETE) 25 ANSWERS

SEARCH TIME: 00.00.01

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L34 ANSWER 1 OF 14 REGISTRY COPYRIGHT 2009 ACS on STN

RN 1137268-03-1 REGISTRY

ED Entered STN: 21 Apr 2009

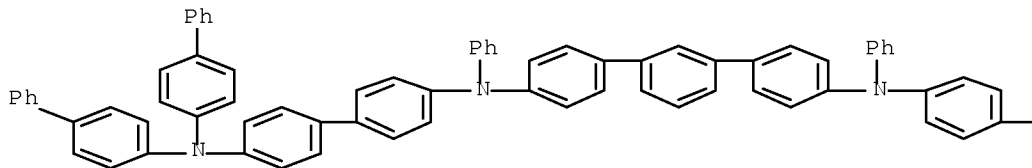
CN [1,1':3',1''-Terphenyl]-4,4''-diamine,
 N4,N4''-bis[4'-[bis([1,1'-biphenyl]-4-yl)amino][1,1'-biphenyl]-4-yl]-
 N4,N4''-diphenyl- (CA INDEX NAME)

MF C102 H74 N4

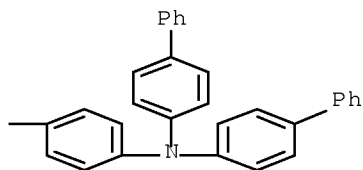
SR CA

LC STN Files: CA, CAPLUS

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PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT

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1 REFERENCES IN FILE CAPLUS (1907 TO DATE)

REFERENCE 1: 150:387201

L34 ANSWER 2 OF 14 REGISTRY COPYRIGHT 2009 ACS on STN

RN 926038-17-7 REGISTRY

ED Entered STN: 12 Mar 2007

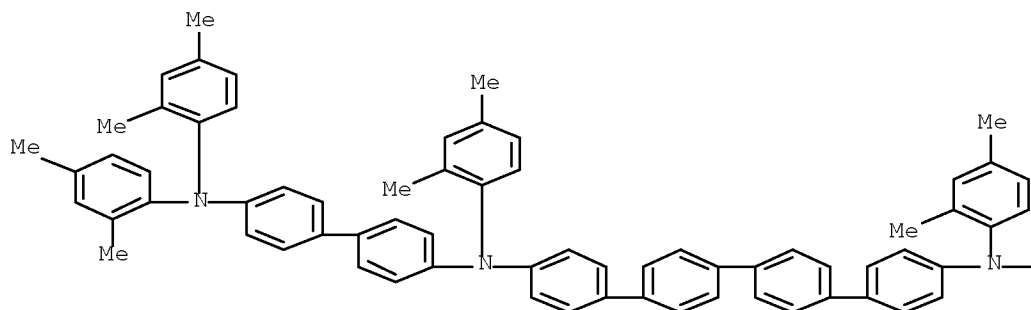
CN [1,1':4',1'':4'',1'''-Quaterphenyl]-4,4'''-diamine,
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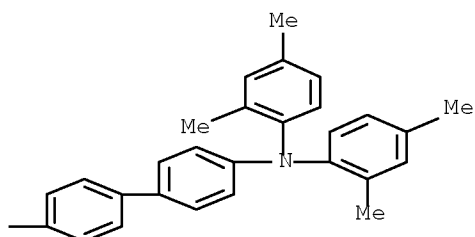
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LC STN Files: CA, CAPLUS

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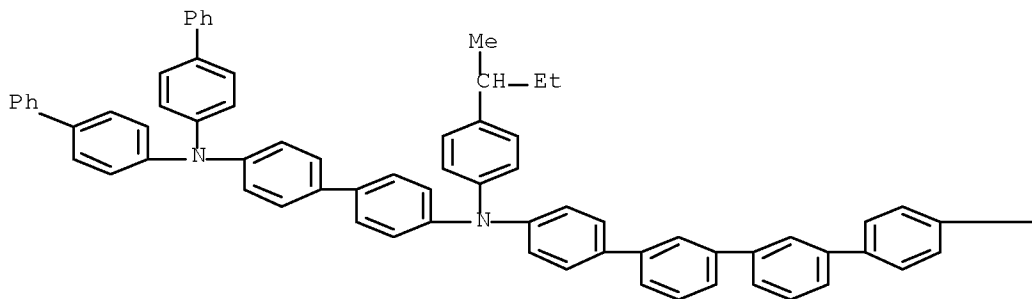
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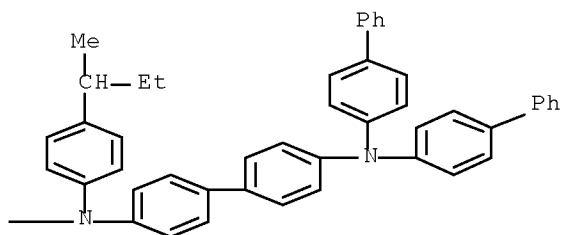
REFERENCE 1: 146:261979

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RN 915030-96-5 REGISTRY
ED Entered STN: 07 Dec 2006
CN [1,1':3',1'':3'',1'''-Quaterphenyl]-4,4'''-diamine,
N,N'-bis[4'-[bis([1,1'-biphenyl]-4-yl)amino][1,1'-biphenyl]-4-yl]-N,N'-
bis[4-(1-methylpropyl)phenyl]- (9CI) (CA INDEX NAME)
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SR CA
LC STN Files: CA, CAPLUS

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PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT

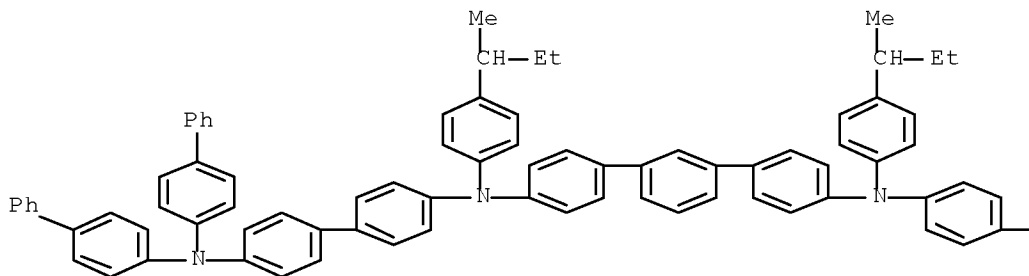
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1 REFERENCES IN FILE CAPLUS (1907 TO DATE)

REFERENCE 1: 145:505203

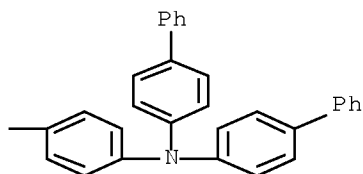
L34 ANSWER 4 OF 14 REGISTRY COPYRIGHT 2009 ACS on STN
RN 915030-91-0 REGISTRY

ED Entered STN: 07 Dec 2006
 CN [1,1':3',1''-Terphenyl]-4,4''-diamine,
 N,N'-bis[4'-[bis([1,1'-biphenyl]-4-yl)amino][1,1'-biphenyl]-4-yl]-N,N'-
 bis[4-(1-methylpropyl)phenyl]- (9CI) (CA INDEX NAME)
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 SR CA
 LC STN Files: CA, CAPLUS

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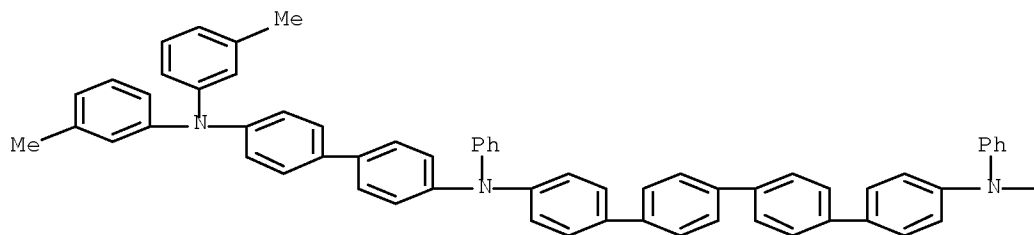
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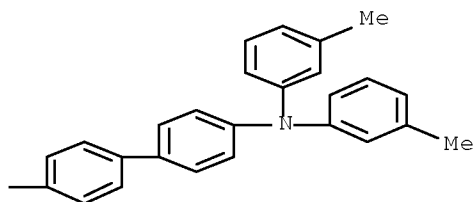
REFERENCE 1: 145:505203

L34 ANSWER 5 OF 14 REGISTRY COPYRIGHT 2009 ACS on STN
 RN 869737-31-5 REGISTRY
 ED Entered STN: 12 Dec 2005
 CN [1,1':4',1'':4'',1'''-Quaterphenyl]-4,4'''-diamine,
 N,N'-[4'-[bis(3-methylphenyl)amino][1,1'-biphenyl]-4-yl]-N,N'-diphenyl-
 (9CI) (CA INDEX NAME)
 MF C88 H70 N4
 SR CA
 LC STN Files: CA, CAPLUS, USPATFULL

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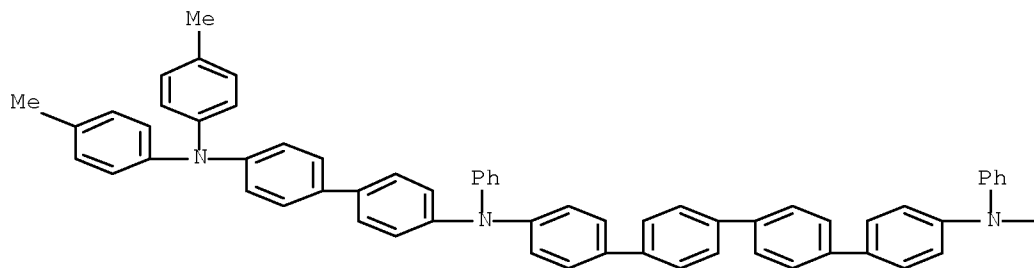
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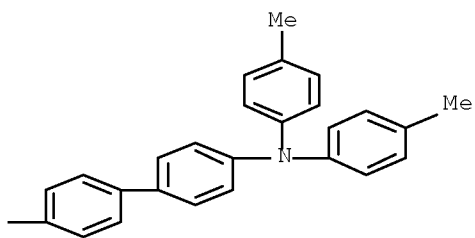
REFERENCE 1: 143:485946

L34 ANSWER 6 OF 14 REGISTRY COPYRIGHT 2009 ACS on STN
 RN 869737-30-4 REGISTRY
 ED Entered STN: 12 Dec 2005
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 N,N'-[4'-[bis(4-methylphenyl)amino][1,1'-biphenyl]-4-yl]-N,N'-diphenyl-
 (9CI) (CA INDEX NAME)
 MF C88 H70 N4
 SR CA
 LC STN Files: CA, CAPLUS, USPATFULL

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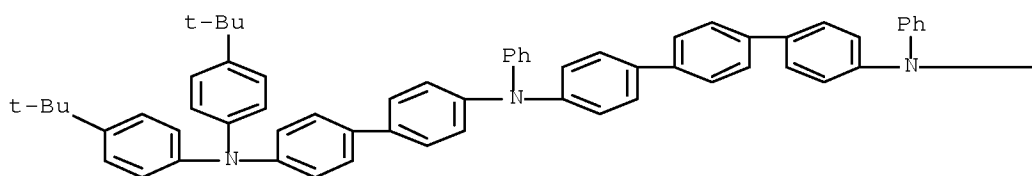
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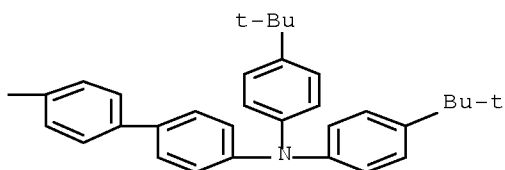
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L34 ANSWER 7 OF 14 REGISTRY COPYRIGHT 2009 ACS on STN
RN 853127-36-3 REGISTRY
ED Entered STN: 03 Aug 2005
CN [1,1':4',1''-Terphenyl]-4,4''-diamine,
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N,N'-diphenyl- (9CI) (CA INDEX NAME)
MF C94 H90 N4
SR CA
LC STN Files: CA, CAPLUS

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PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT

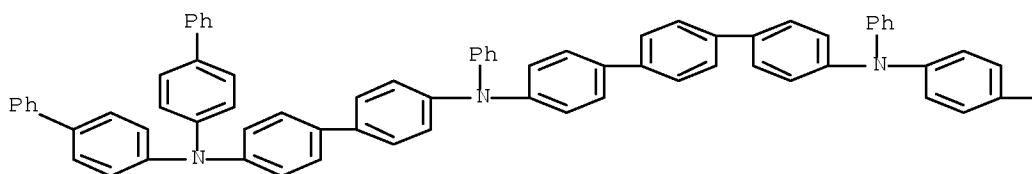
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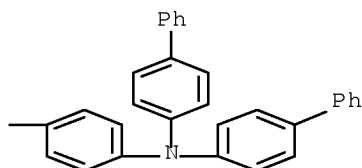
REFERENCE 1: 143:142458

L34 ANSWER 8 OF 14 REGISTRY COPYRIGHT 2009 ACS on STN
 RN 858127-34-1 REGISTRY
 ED Entered STN: 03 Aug 2005
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 N,N'-bis[4'-[bis([1,1'-biphenyl]-4-yl)amino][1,1'-biphenyl]-4-yl]-N,N'-
 diphenyl- (9CI) (CA INDEX NAME)
 MF C102 H74 N4
 SR CA
 LC STN Files: CA, CAPLUS

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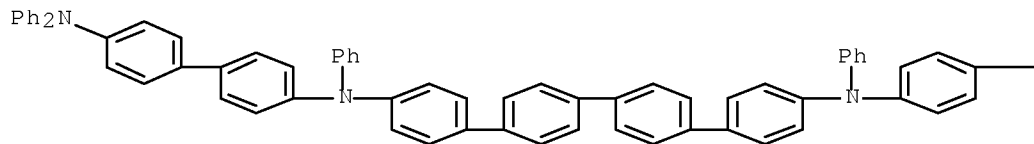
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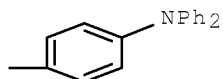
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L34 ANSWER 9 OF 14 REGISTRY COPYRIGHT 2009 ACS on STN
 RN 858127-32-9 REGISTRY
 ED Entered STN: 03 Aug 2005
 CN [1,1':4',1'':4'',1'''-Quaterphenyl]-4,4'''-diamine,
 N,N'-bis[4'-(diphenylamino)[1,1'-biphenyl]-4-yl]-N,N'-diphenyl- (9CI) (CA
 INDEX NAME)
 MF C84 H62 N4
 SR CA
 LC STN Files: CA, CAPLUS, USPATFULL

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PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT

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2 REFERENCES IN FILE CAPLUS (1907 TO DATE)

REFERENCE 1: 143:485946

REFERENCE 2: 143:142458

L34 ANSWER 10 OF 14 REGISTRY COPYRIGHT 2009 ACS on STN

RN 858127-31-8 REGISTRY

ED Entered STN: 03 Aug 2005

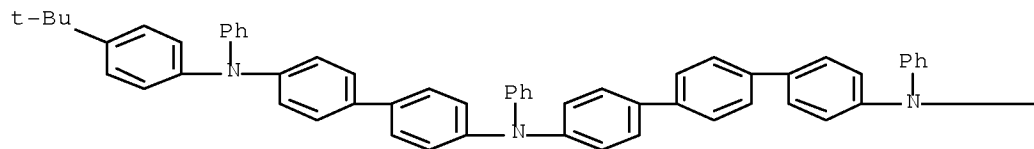
CN [1,1':4',1''-Terphenyl]-4,4''-diamine,
N,N'-bis[4'-[[4-(1,1-dimethylethyl)phenyl]phenyl]phenylamino][1,1'-biphenyl]-4-yl]-N,N'-diphenyl- (9CI) (CA INDEX NAME)

MF C86 H74 N4

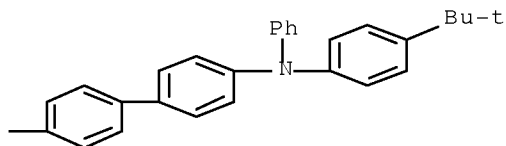
SR CA

LC STN Files: CA, CAPLUS

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PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT

1 REFERENCES IN FILE CA (1907 TO DATE)
1 REFERENCES IN FILE CAPLUS (1907 TO DATE)

REFERENCE 1: 143:142458

L34 ANSWER 11 OF 14 REGISTRY COPYRIGHT 2009 ACS on STN

RN 858127-30-7 REGISTRY

ED Entered STN: 03 Aug 2005

CN [1,1':4',1''-Terphenyl]-4,4''-diamine,
N4,N4''-bis[4'-([1,1'-biphenyl]-4-ylphenylamino)[1,1'-biphenyl]-4-yl]-
N4,N4''-diphenyl- (CA INDEX NAME)

OTHER CA INDEX NAMES:

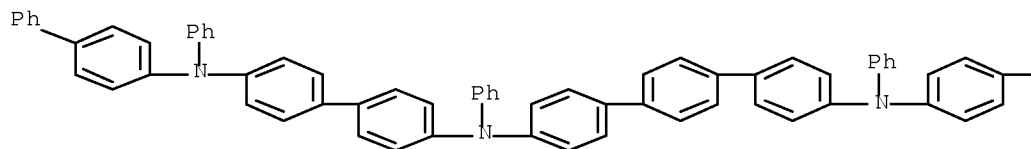
CN [1,1':4',1''-Terphenyl]-4,4''-diamine,
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diphenyl- (9CI)

MF C90 H66 N4

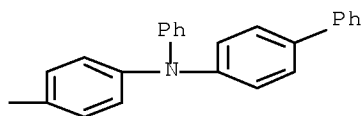
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LC STN Files: CA, CAPLUS

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PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT

3 REFERENCES IN FILE CA (1907 TO DATE)
3 REFERENCES IN FILE CAPLUS (1907 TO DATE)

REFERENCE 1: 150:85579

REFERENCE 2: 147:176522

REFERENCE 3: 143:142458

L34 ANSWER 12 OF 14 REGISTRY COPYRIGHT 2009 ACS on STN

RN 697234-81-4 REGISTRY

ED Entered STN: 22 Jun 2004

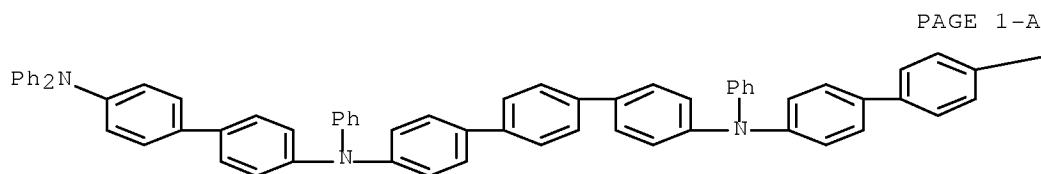
CN [1,1':4',1''-Terphenyl]-4,4''-diamine,
N4,N4''-bis[4'-(diphenylamino)[1,1'-biphenyl]-4-yl]-N4,N4''-diphenyl- (CA

OTHER CA INDEX NAMES:

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CN      [1,1':4',1''-Terphenyl]-4,4''-diamine,
        N,N'-bis[4'-(diphenylamino)[1,1'-biphenyl]-4-yl]-N,N'-diphenyl- (9CI)
MF      C78 H58 N4
SR      CAS Client Services
LC      STN Files:      CA, CAPLUS, USPAT2, USPATFULL

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PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT

5 REFERENCES IN FILE CA (1907 TO DATE)
5 REFERENCES IN FILE CAPLUS (1907 TO DATE)

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REFERENCE 2: 147:176522

REFERENCE 3: 143:238366

REFERENCE 4: 143:142458

REFERENCE 5: 142:344854

L34 ANSWER 13 OF 14 REGISTRY COPYRIGHT 2009 ACS on STN

RN 292148-94-8 REGISTRY

ED Entered STN: 03 Oct 2000

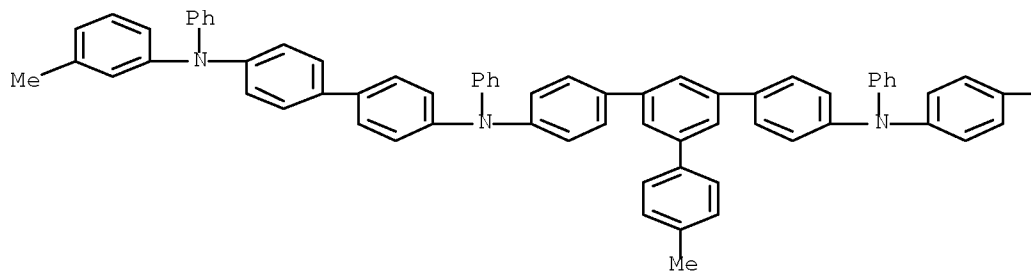
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MF C87 H68 N4

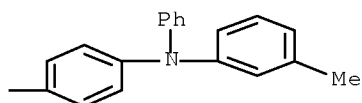
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LC STN Files: CA, CAPLUS

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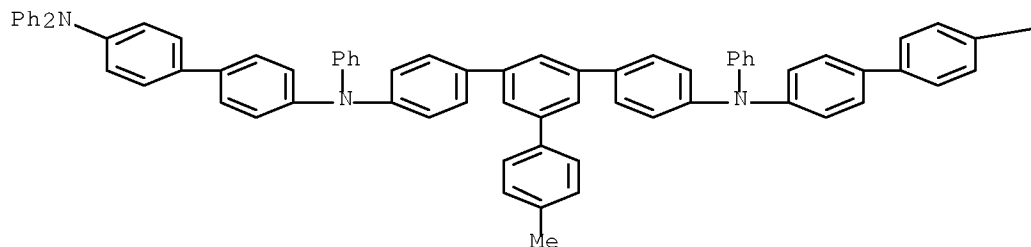
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REFERENCE 1: 133:230365

L34 ANSWER 14 OF 14 REGISTRY COPYRIGHT 2009 ACS on STN
RN 292148-93-7 REGISTRY
ED Entered STN: 03 Oct 2000
CN [1,1':3',1''-Terphenyl]-4,4''-diamine,
N,N'-bis[4'-(diphenylamino)[1,1'-biphenyl]-4-yl]-5'-(4-methylphenyl)-N,N'-
diphenyl- (9CI) (CA INDEX NAME)
MF C85 H64 N4
SR CA
LC STN Files: CA, CAPLUS

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—NPh₂

PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT

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1 REFERENCES IN FILE CAPLUS (1907 TO DATE)

REFERENCE 1: 133:230365

=> fil hcaplus

FILE 'HCAPLUS' ENTERED AT 07:31:03 ON 04 NOV 2009
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FILE COVERS 1907 - 4 Nov 2009 VOL 151 ISS 19
FILE LAST UPDATED: 3 Nov 2009 (20091103/ED)
REVISED CLASS FIELDS (/NCL) LAST RELOADED: Aug 2009
USPTO MANUAL OF CLASSIFICATIONS THESAURUS ISSUE DATE: Aug 2009

HCAplus now includes complete International Patent Classification (IPC) reclassification data for the third quarter of 2009.

CAS Information Use Policies apply and are available at:

<http://www.cas.org/legal/infopolicy.html>

This file contains CAS Registry Numbers for easy and accurate substance identification.

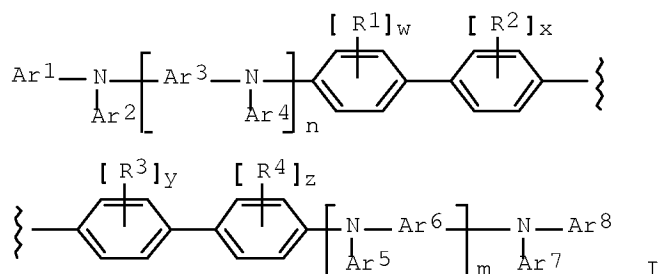
During November, try the new LSUS format of legal status information in the CA/CAPLUS family databases for free! Complete details on the number of free displays and other databases participating in this offer appear in NEWS 10.

=> d 140 bib abs hitstr retable tot

L40 ANSWER 1 OF 7 HCAPLUS COPYRIGHT 2009 ACS on STN
AN 2007:193531 HCAPLUS Full-text
DN 146:261979
TI Arylamines, electrophotographic photoconductors using them, process cartridges, and electrophotographic apparatus
IN Kaku, Kenichi; Tanaka, Takakazu; Ogaki, Harunobu; Noguchi, Kazunori
PA Canon Inc., Japan
SO Jpn. Kokai Tokkyo Koho, 29pp.
CODEN: JKXXAF
DT Patent
LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2007045719	A	20070222	JP 2005-229462	20050808 <--
FRAI	JP 2005-229462		20050808	<--	
OS	MARPAT 146:261979				
GI					



AB The arylamines are I (R1-R4 = C1-4 alkyl, aryl, halo, NO2, cyano, C1-4 alkoxy; Ar1-Ar8 = aryl, heterocyclyl; Ar3, Ar6 = arylene, heterocyclylene; m, n = 0, 1; w, x, y, z = 0-4). Electrophotog. photoconductors, preferably multilayer-type photoconductors with I-containing charge transporting layers, produce high-quality images after repeated use.

IT 926038-17-7P

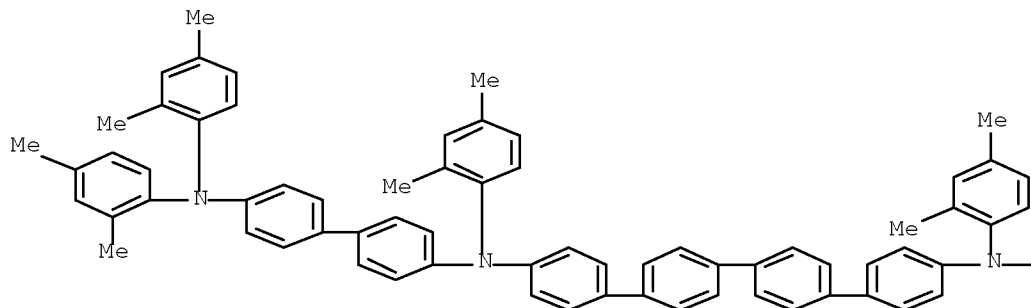
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(arylamines as charge-transporting agents for electrophotog. photoconductors)

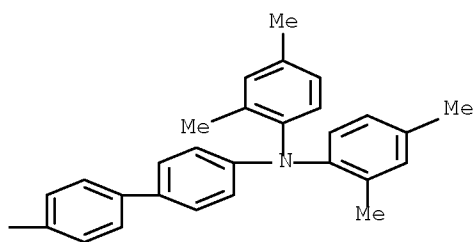
RN 926038-17-7 HCAPLUS

CN [1,1':4',1'':4'',1'''-Quaterphenyl]-4,4'''-diamine, N4,N4'''-bis[4'-[bis(2,4-dimethylphenyl)amino][1,1'-biphenyl]-4-yl]-N4,N4'''-bis(2,4-dimethylphenyl)- (CA INDEX NAME)

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L40 ANSWER 2 OF 7 HCAPLUS COPYRIGHT 2009 ACS on STN
 AN 2006:1206489 HCAPLUS Full-text
 DN 145:505203
 TI Preparation of aromatic amines as organic electroluminescent materials
 IN Inoue, Tetsuya; Kondo, Hirofumi; Junke, Tadanori
 PA Idemitsu Kosan Co., Ltd., Japan
 SO PCT Int. Appl., 76pp.
 CODEN: PIXXD2
 DT Patent
 LA Japanese
 FAN.CNT 1

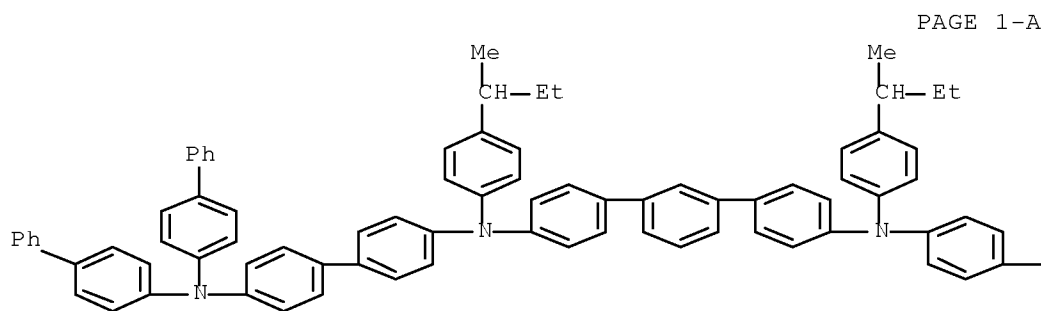
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PI	WO 2006120859	A1	20061116	WO 2006-JP308315	20060420 <--
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	RW:			AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM	
	EP 1880990	A1	20080123	EP 2006-745496	20060420 <--
	R:			AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LI, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR	
	KR 2008007578	A	20080122	KR 2007-725981	20071108 <--
	CN 101171224	A	20080430	CN 2006-80015667	20071108 <--
	IN 2007CN05055	A	20080530	IN 2007-CN5055	20071109 <--
PRAI	JP 2005-136573	A	20050509	<--	
	JP 2005-311774	A	20051026	<--	
	WO 2006-JP308315	W	20060420	<--	
OS	MARPAT 145:505203				
GI					

* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT *

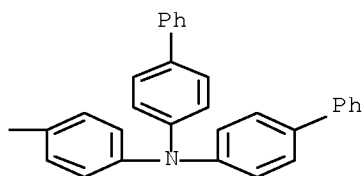
AB Title compds. I [Arl-Ar6 = (un)substituted aryl, (un)substituted heteroaryl;
 Ar1 and Ar2, Ar5 and Ar6 may be linked through single bond to form carbazole

group.; R1-R4 = halo, carboxyl, amino, etc.; n, m, p, q = 0-4; L = -(Ar7)a-(Ar8)b-(Ar9)c-, Q1; Ar7-Ar9 = divalent Ar1-Ar6; a, b, c = 1-3; R6, R7 = halo, carboxyl, amino, etc.; R6 and R7 may combine to form a ring.] were prepared For example, tris(dibenzylideneacetone)dipalladium catalyzed coupling reaction of compound II with compound III [R = H], e.g. prepared from 1,3-diiodobenzene in 2 steps, afforded compound III [R = Q2] in 34% yield. An electroluminescent device using compound III [R = Q2] emitted blue electroluminescence with the luminous efficiency of 8.6 cd/A. Of note, compds. I have high solubility and are capable of film formation in a wet process.

IT 915030-91-0P 915030-96-5P
 RL: DEV (Device component use); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses) (preparation of aromatic amines as organic electroluminescent materials)
 RN 915030-91-0 HCAPLUS
 CN [1,1':3',1''-Terphenyl]-4,4''-diamine, N,N'-bis[4'-[bis([1,1'-biphenyl]-4-yl)amino][1,1'-biphenyl]-4-yl]-N,N'-bis[4-(1-methylpropyl)phenyl]- (9CI) (CA INDEX NAME)

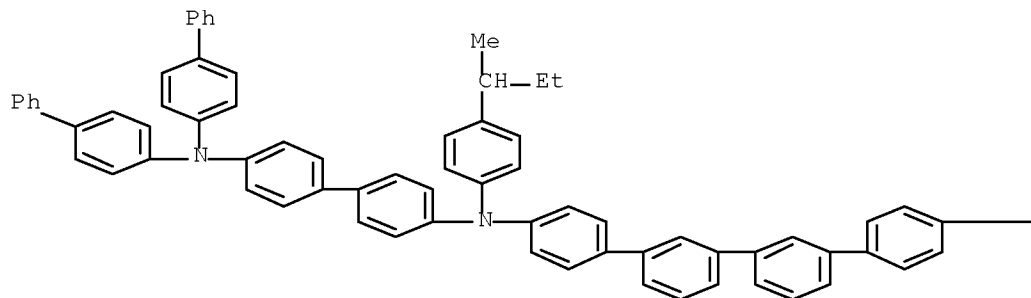


PAGE 1-B

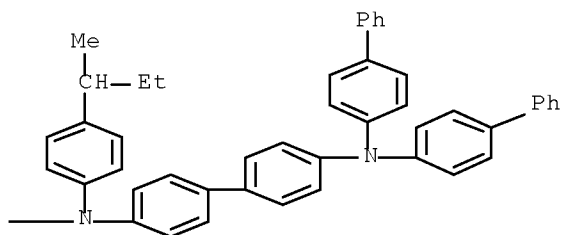


RN 915030-96-5 HCAPLUS
 CN [1,1':3',1''':3'',1''''-Quaterphenyl]-4,4''''-diamine, N,N'-bis[4'-[bis([1,1'-biphenyl]-4-yl)amino][1,1'-biphenyl]-4-yl]-N,N'-bis[4-(1-methylpropyl)phenyl]- (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 1-B



RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Denso Corp	2005			JP 2005108804 A	HCAPLUS
Denso Corp	2005			US 2005184657 A1	
Denso Corp	2005			JP 2005276802 A	HCAPLUS
Denso Corp	2005			US 200564237 A1	
Hodogaya Kagaku Kogyo K	2005			WO 2005063684 A1	HCAPLUS
Minolta Co Ltd	1998			JP 10-310574 A	HCAPLUS
Minolta Co Ltd	2000			JP 2000169448 A	HCAPLUS
Minolta Co Ltd	2000			JP 2000247932 A	HCAPLUS
Mitsui Chemicals Inc	2001			JP 2001226331 A	HCAPLUS
Sony Corp	2005			US 2005260451 A1	
Sony Corp	2005			JP 2005339823 A	HCAPLUS
Syntec Gesellschaft Fur	2002			DE 10109463 A1	HCAPLUS
OSC.G 1	THERE ARE 1 CAPLUS RECORDS THAT CITE THIS RECORD (3 CITINGS)				

L40 ANSWER 3 OF 7 HCAPLUS COPYRIGHT 2009 ACS on STN

AN 2005:1242881 HCAPLUS Full-text

DN 143:485946

TI Organic electroluminescence element containing specific hole-transporting compound and display device constructed therefrom

IN Kijima, Yasunori

PA Sony Corporation, Japan

SO U.S. Pat. Appl. Publ., 30 pp.

CODEN: USXXCO

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 20050260451	A1	20051124	US 2005-132816	20050519 <--
	JP 2005339823	A	20051208	JP 2004-153203	20040524 <--
	KR 2006046141	A	20060517	KR 2005-42949	20050523 <--
	CN 1703128	A	20051130	CN 2005-10079218	20050524 <--
	CN 100452478	C	20090114		
FRAI	JP 2004-153203	A	20040524	<--	

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

AB The invention relates to a display device having a cathode, an anode, and a light emitting unit interposed between said cathode and said anode including at least an organic light emitting layer wherein said emitting unit contains an organic material having good heat resistance and high mobility. The display device is comparable or superior to conventional one in properties of operation at normal temperature and which also exhibits improved high-temperature performance and extended life.

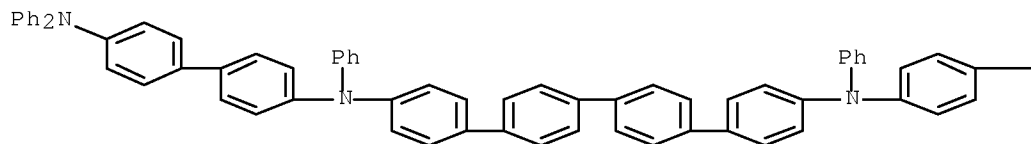
IT 858127-32-9 869737-30-4 869737-31-5

RL: TEM (Technical or engineered material use); USES (Uses)
(hole-transporting compound in organic electroluminescence element)

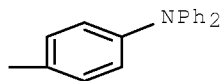
RN 858127-32-9 HCAPLUS

CN [1,1':4',1'':4'',1'''-Quaterphenyl]-4,4'''-diamine,
N,N'-bis[4'-(diphenylamino)[1,1'-biphenyl]-4-yl]-N,N'-diphenyl- (9CI) (CA INDEX NAME)

PAGE 1-A



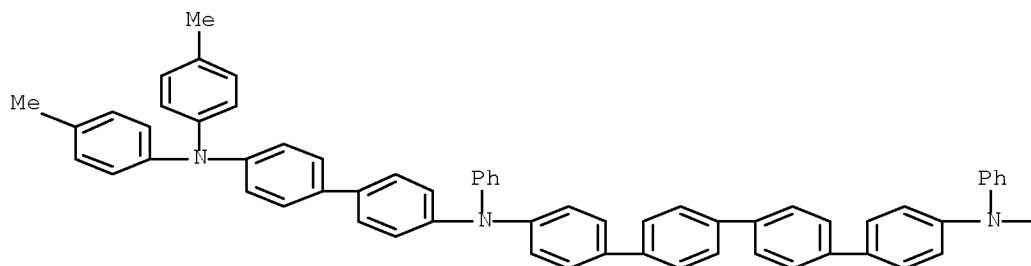
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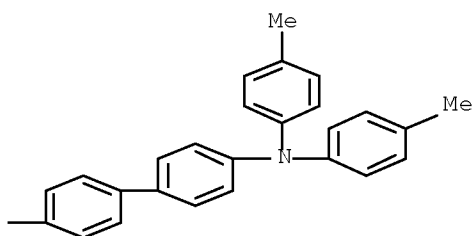
RN 869737-30-4 HCAPLUS

CN [1,1':4',1'':4'',1'''-Quaterphenyl]-4,4'''-diamine,
N,N'-[4'-[bis(4-methylphenyl)amino][1,1'-biphenyl]-4-yl]-N,N'-diphenyl- (9CI) (CA INDEX NAME)

PAGE 1-A

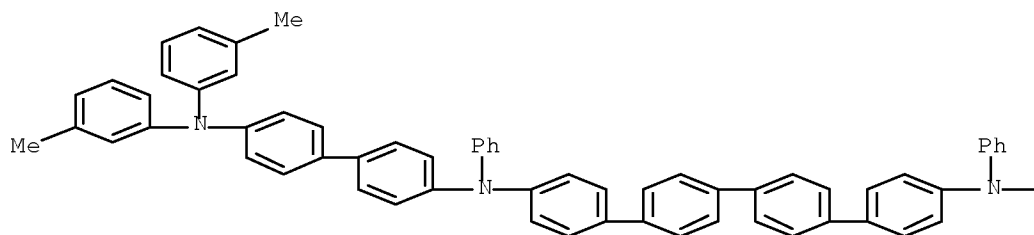


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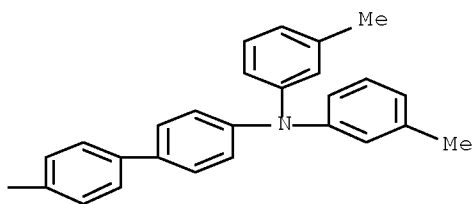


RN 869737-31-5 HCAPLUS
 CN [1,1':4',1'':4'',1'''-Quaterphenyl]-4,4'''-diamine,
 N,N'-[4'-[bis(3-methylphenyl)amino][1,1'-biphenyl]-4-yl]-N,N'-diphenyl-
 (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 1-B



OSC.G 2 THERE ARE 2 CAPLUS RECORDS THAT CITE THIS RECORD (5 CITINGS)

L40 ANSWER 4 OF 7 HCAPLUS COPYRIGHT 2009 ACS on STN
 AN 2005:902553 HCAPLUS Full-text
 DN 143:238366
 TI Organic electroluminescent device
 IN Kato, Tetsuya; Kojima, Kazushige
 PA Denso Corporation, Japan
 SO U.S. Pat. Appl. Publ., 22 pp.
 CODEN: USXXCO
 DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 20050184657	A1	20050825	US 2005-61449	20050222 <--
	US 7374930	B2	20080520		
	JP 2005276802	A	20051006	JP 2004-302986	20041018 <--
	KR 2006043123	A	20060515	KR 2005-14874	20050223 <--
PRAI	JP 2004-49462	A	20040225	<--	
	JP 2004-302986	A	20041018	<--	

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

OS MARPAT 143:238366

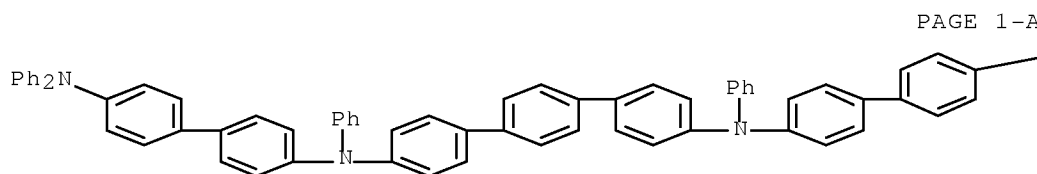
AB An organic EL device includes a pair of electrodes, a light emitter layer obtained by mixing a hole transporting material made of a tertiary amine compound, an electron transporting material and a light emitting additive. The tertiary amine compound constituting the hole transporting material has only one oxidation potential as measured by the cyclic voltammetry. A difference in ionization potential between the hole transporting material and electron transporting material of the light emitter layer is 0.35 eV or greater.

IT 697234-81-4P

RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(organic electroluminescent device)

RN 697234-81-4 HCAPLUS

CN [1,1':4',1''-Terphenyl]-4,4''-diamine,
N4,N4''-bis[4'-(diphenylamino)[1,1'-biphenyl]-4-yl]-N4,N4''-diphenyl- (CA
INDEX NAME)

—NPh₂

PAGE 1-B

OSC.G 2 THERE ARE 2 CAPLUS RECORDS THAT CITE THIS RECORD (3 CITINGS)

L40 ANSWER 5 OF 7 HCAPLUS COPYRIGHT 2009 ACS on STN

AN 2005:612233 HCAPLUS Full-text

DN 143:142458

TI Tetramine compound and organic EL device

IN Kusano, Shigeru; Koike, Makoto; Takesue,
Atsushi; Anzai, Mitsutoshi

PA Nodogaya Chemical Co., Ltd., Japan

SO PCT Int. Appl., 41 pp.

CODEN: PIXXD2

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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PI WO 2005063684 A1 20050714 WO 2004-JP19755 20041224 <--
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CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD,
GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC,
LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI,
NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY,
TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW
RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM,
AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK,
EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT,
RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML,
MR, NE, SN, TD, TG
EP 1698613 A1 20060906 EP 2004-808105 20041224 <--
R: DE, FR, GB
CN 1898191 A 20070117 CN 2004-80039085 20041224 <--
KR 2006130078 A 20061218 KR 2006-712620 20060623 <--
US 20070149816 A1 20070628 US 2006-584140 20060626 <--
PRAI JP 2003-434432 A 20031226 <--
WO 2004-JP19755 W 20041224 <--

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ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

OS MARPAT 143:142458

AB Disclosed is a tetramine compound represented by the general formula (A)(B)N-(p-C6H4)2-N(C)-(p-C6H4)nN(D)-(p-C6H4)2-N(E)(F) [A, B, C, D, E, F = Ph ring; each A, E substituted with R1; each B, F substituted with R2; each C, D substituted with R3; R1, R2, R3 = H, C4-8 tert-alkyl, or aryl (un)substituted with C4-8 tert-alkyl; n = 3, 4]. The present invention solves the most serious problem of the conventional organic EL devices by providing a material suitable for an organic EL device wherein emission stability is required when driven at high temps. Also disclosed are an organic EL device containing such a tetramine compound and a method for producing such a tetramine compound

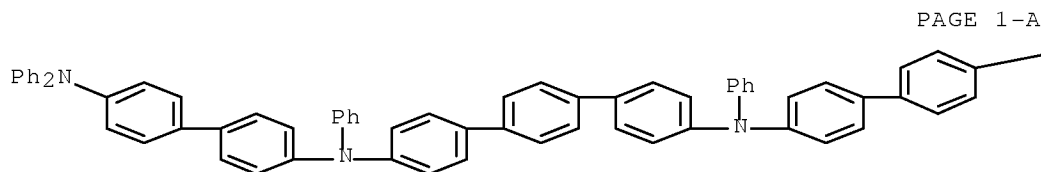
IT 697234-81-4P 858127-30-7P 858127-31-8P
858127-32-9P 858127-34-1P 858127-36-3P

RL: DEV (Device component use); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)

(tetramine compound employed in organic electroluminescent device)

RN 697234-81-4 HCAPLUS

CN [1,1':4',1''-Terphenyl]-4,4''-diamine,
N4,N4''-bis[4'-(diphenylamino)[1,1'-biphenyl]-4-yl]-N4,N4''-diphenyl- (CA INDEX NAME)



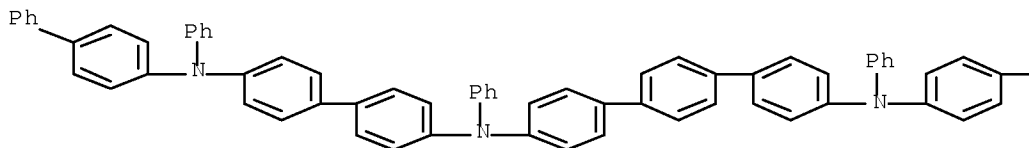
—NPh₂

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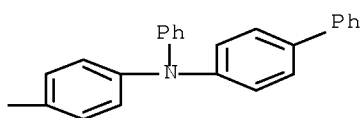
RN 858127-30-7 HCAPLUS

CN [1,1':4',1''-Terphenyl]-4,4''-diamine,
N4,N4'''-bis[4'-([1,1'-biphenyl]-4-ylphenylamino)[1,1'-biphenyl]-4-yl]-
N4,N4'''-diphenyl- (CA INDEX NAME)

PAGE 1-A



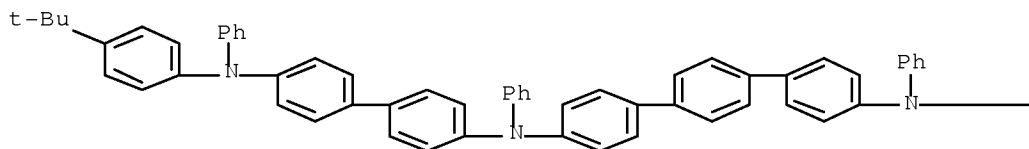
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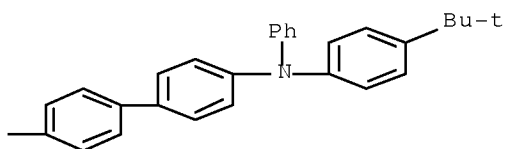
RN 858127-31-8 HCAPLUS

CN [1,1':4',1''-Terphenyl]-4,4''-diamine,
N,N'-bis[4'-[[4-(1,1-dimethylethyl)phenyl]phenylamino][1,1'-biphenyl]-4-yl]-N,N'-diphenyl- (9CI) (CA INDEX NAME)

PAGE 1-A



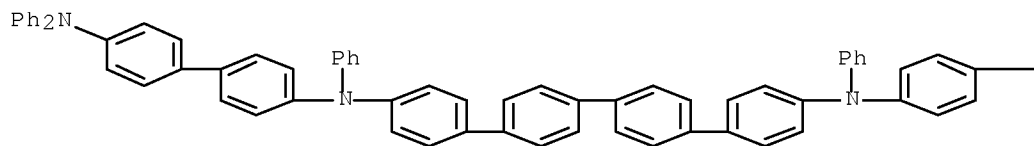
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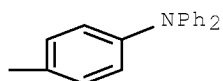
RN 858127-32-9 HCAPLUS

CN [1,1':4',1''':4'''',1''''-Quaterphenyl]-4,4'''-diamine,
N,N'-bis[4'-(diphenylamino)[1,1'-biphenyl]-4-yl]-N,N'-diphenyl- (9CI) (CA INDEX NAME)

PAGE 1-A



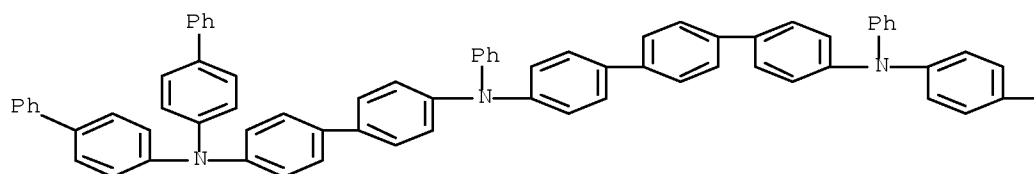
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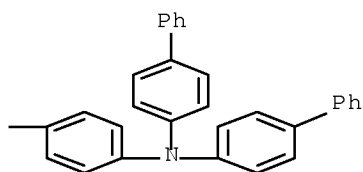
RN 858127-34-1 HCAPLUS

CN [1,1':4',1''-Terphenyl]-4,4''-diamine,
N,N'-bis[4'-[bis([1,1'-biphenyl]-4-yl)amino][1,1'-biphenyl]-4-yl]-N,N'-
diphenyl- (9CI) (CA INDEX NAME)

PAGE 1-A



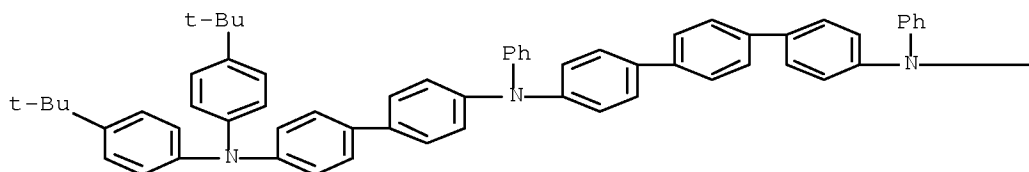
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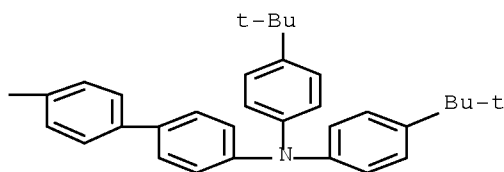
RN 858127-36-3 HCAPLUS

CN [1,1':4',1''-Terphenyl]-4,4''-diamine,
N,N'-bis[4'-[bis(4-(1,1-dimethylethyl)phenyl)amino][1,1'-biphenyl]-4-yl]-
N,N'-diphenyl- (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 1-B



RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Hodogaya Chemical Co Lt	2002			JP 2002167365 A	HCAPLUS
Hodogaya Chemical Co Lt	2002			JP 2002179630 A	HCAPLUS
Minolta Co Ltd	2000			JP 2000247932 A	HCAPLUS
OSC.G 2	THERE ARE 2 CAPLUS RECORDS THAT CITE THIS RECORD (2 CITINGS)				

L40 ANSWER 6 OF 7 HCAPLUS COPYRIGHT 2009 ACS on STN

AN 2005:259435 HCAPLUS Full-text

DN 142:344854

TI Organic electroluminescent devices and production process thereof

IN Kato, Tetsuya; Kojima, Kazushige; Kajioaka, Takanori; Ishii, Masahiko

PA Denso Corporation, Japan

SO U.S. Pat. Appl. Publ., 40 pp.

CODEN: USXXCO

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 20050064237	A1	20050324	US 2004-852698	20040525 <--
	US 7357992	B2	20080415		
	JP 2005108804	A	20050421	JP 2004-41458	20040218 <--
	US 20070293704	A1	20071220	US 2007-882124	20070731 <--
	US 7402701	B2	20080722		
	JP 2009108096	A	20090521	JP 2008-323730	20081219 <--
PRAI	JP 2003-149516	A	20030527	<--	
	JP 2003-316872	A	20030909	<--	
	JP 2004-41458	A	20040218	<--	
	US 2004-852698	A1	20040525	<--	

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

OS MARPAT 142:344854

AB Organic electroluminescent devices are described which comprise a pair of electrodes sandwiching a light-emitting layer comprising a mixture of a hole-transporting material consisting of a tertiary amine compound, an electron-

transporting material and a light-emitting additive material, in which the tertiary amine compound has ≥ 2 oxidation potentials differing by ≥ 0.22 V (determined by cyclic voltammetry) and a glass transition temperature of $\geq 100^\circ$, and the electron-transporting material has a glass transition temperature of $\geq 100^\circ$. Devices are described which entail employ specific tert. amine compds. Methods for fabricating the devices are also described.

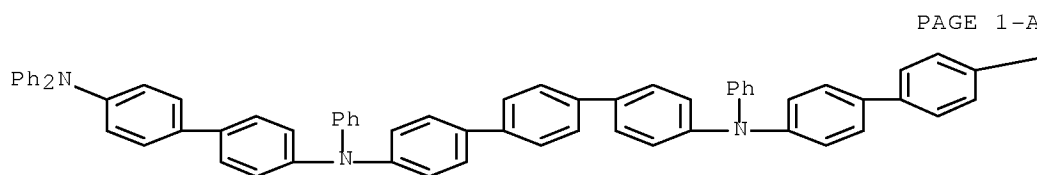
IT 697234-81-4P

RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)

(organic electroluminescent devices using tertiary amine hole-transporting material and their fabrication)

RN 697234-81-4 HCAPLUS

CN [1,1':4',1''-Terphenyl]-4,4''-diamine,
N4,N4''-bis[4'-(diphenylamino)[1,1'-biphenyl]-4-yl]-N4,N4''-diphenyl- (CA
INDEX NAME)



—NPh₂

PAGE 1-B

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
=====	+	+	+	+	+
Anon	1996			JP 848656	
Anon	1998			WO 9808360	HCAPLUS
Anon	2000			JP 2000156290	HCAPLUS
Aziz	2002			US 6392339 B1	HCAPLUS
Inoue	1997			US 5635308 A	HCAPLUS
Kobori	2001			US 6285039 B1	HCAPLUS
Mori	1994			US 5281489 A	HCAPLUS
Nakaya	1998			US 5792557 A	HCAPLUS
OSC.G 1	THERE ARE 1 CAPLUS RECORDS THAT CITE THIS RECORD (1 CITINGS)				

L40 ANSWER 7 OF 7 HCAPLUS COPYRIGHT 2009 ACS on STN

AN 2000:631876 HCAPLUS Full-text

DN 133:230365

TI Aromatic amino compounds, their preparation, and uses in
electroluminescent element or electrophotographic photoreceptor

IN Fujino, Yasumitsu; Ueda, Hideaki; Furukawa, Keiichi

PA Minolta Camera Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 35 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

PATENT NO.

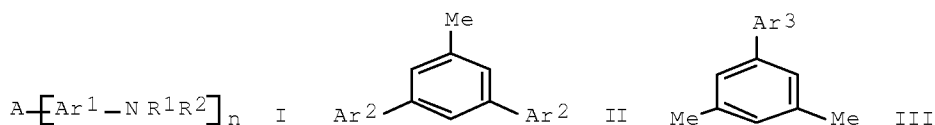
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DATE

APPLICATION NO.

DATE

 PI JP 2000247932 A 20000912 JP 1999-52513 19990301 <--
 JP 4232259 B2 20090304
 PRAI JP 1999-52513 19990301 <--
 OS MARPAT 133:230365
 GI



AB The amino compds. A(Ar¹NR¹R²)_n [I; A = Q¹, Q²; Ar², Ar³ = (substituted) aryl; Ar¹ = (substituted) arylene; R¹, R² = alkyl, aralkyl, (substituted) aryl, (substituted) aromatic heterocyclyl; n = 1, 2] are prepared by reaction of A(Ar¹X)_n (A, Ar¹, n = same as I; X = halo) with HNR¹R² (R¹, R² = same as I). I show high charge-transporting ability, luminescence, and durability.

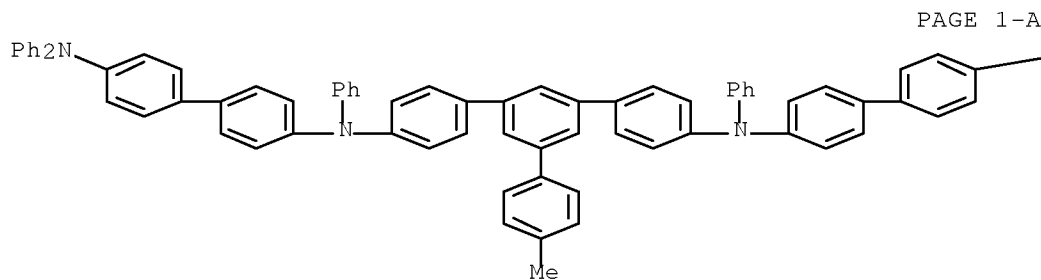
IT 292148-93-7F 292148-94-8F

RL: DEV (Device component use); PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(preparation of aromatic amino compds. for electroluminescent element or electrophotog. photoreceptor)

RN 292148-93-7 HCAPLUS

CN [1,1':3',1''-Terphenyl]-4,4''-diamine,
 N,N'-bis[4'-(diphenylamino)[1,1'-biphenyl]-4-yl]-5'-(4-methylphenyl)-N,N'-diphenyl- (9CI) (CA INDEX NAME)



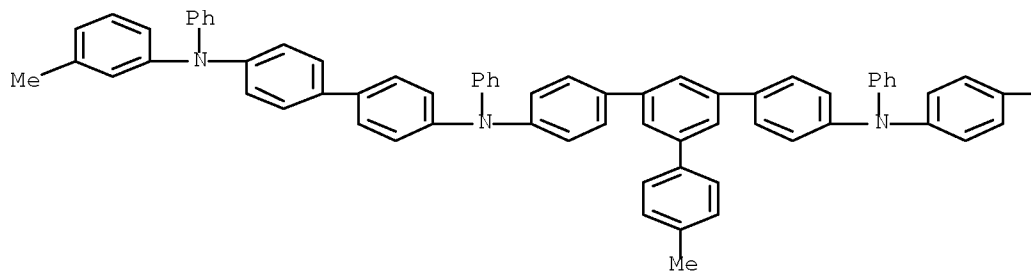
—NPh₂

PAGE 1-B

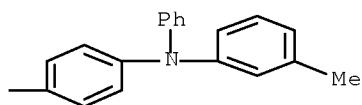
RN 292148-94-8 HCAPLUS

CN [1,1':3',1''-Terphenyl]-4,4''-diamine,
 5'-(4-methylphenyl)-N,N'-bis[4'-[(3-methylphenyl)phenylamino][1,1'-biphenyl]-4-yl]-N,N'-diphenyl- (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 1-B



OSC.G 3 THERE ARE 3 CAPLUS RECORDS THAT CITE THIS RECORD (3 CITINGS)

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L41 ANSWER 1 OF 3 HCAPLUS COPYRIGHT 2009 ACS on STN

AN 2009:390859 HCAPLUS Full-text

DN 150:387201

TI Organic thin film transistor

IN Nakamura, Hiroaki; Nakano, Yuki; Saito, Masatoshi; Kondo, Hirofumi

PA Idemitsu Kosan Co., Ltd., Japan

SO PCT Int. Appl., 70pp.

CODEN: PIXXD2

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2009041254	A1	20090402	WO 2008-JP66248	20080909
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	AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ,				
	CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES,				
	FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, KE, KG,				
	KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME,				
	MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL,				
	PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TJ, TM,				
	TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW				
	RW:				
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	IE, IS, IT, LT, LU, LV, MC, MT, NL, NO, PL, PT, RO, SE, SI, SK,				
	TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD,				
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	AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
	JP 2009081265	A	20090416	JP 2007-249132	20070926
FRAI	JP 2007-249132	A	20070926		
	JP 2008-196278	A	20080730		

AB In an organic thin film transistor, at least three terminals of a gate electrode, a source electrode and a drain electrode, and an insulator layer and an organic semiconductor layer are arranged on a substrate, and a current

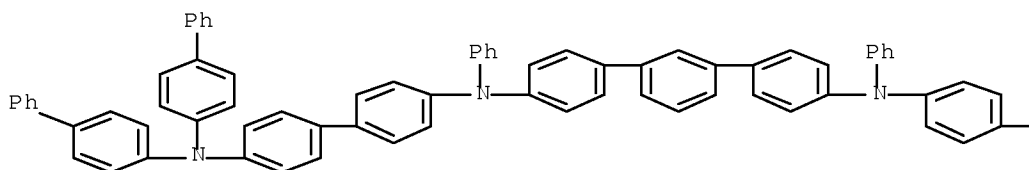
IT 1137268-03-1

(channel control layer; organic TFTs containing organic semiconductor layers and channel control layers)

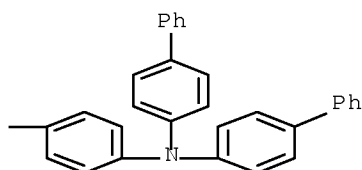
RN 1137268-03-1 HCAPLUS

CN [1,1':3',1''-Terphenyl]-4,4''-diamine,
N4,N4'''-bis[4'-[bis([1,1'-biphenyl]-4-yl)amino][1,1'-biphenyl]-4-yl]-
N4,N4'''-diphenyl- (CA INDEX NAME)

PAGE 1-A



PAGE 1-B



RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Idemitsu Kosan Co Ltd	2005			KR 1020060134956 A	
Idemitsu Kosan Co Ltd	2005			EP 1695952 A1	HCAPLUS
Idemitsu Kosan Co Ltd	2005			CN 1894179 A	HCAPLUS
Idemitsu Kosan Co Ltd	2005			WO 2005056505 A1	HCAPLUS
Idemitsu Kosan Co Ltd	2005			JP 2005170911 A	HCAPLUS
Idemitsu Kosan Co Ltd	2005			US 20070106103 A1	HCAPLUS
Idemitsu Kosan Co Ltd	2006			CN 101171224 A	HCAPLUS
Idemitsu Kosan Co Ltd	2006			KR 1020080007578 A	
Idemitsu Kosan Co Ltd	2006			EP 1880990 A1	HCAPLUS
Idemitsu Kosan Co Ltd	2006			WO 2006120859 A1	HCAPLUS
Idemitsu Kosan Co Ltd	2007			WO 2007094331 A1	HCAPLUS
Idemitsu Kosan Co Ltd	2007			JP 2007220772 A	HCAPLUS
Lucent Technologies Inc	2000			JP 200029403 A	
Lucent Technologies Inc	2000			TW 410478 B	HCAPLUS
Lucent Technologies Inc	2000			US 6150668 A	HCAPLUS
Lucent Technologies Inc	2000			EP 962984 A2	HCAPLUS
Merck Patent GmbH	2007			DE 102004009355 A	HCAPLUS
Merck Patent GmbH	2007			KR 1020070012645 A	

Merck Patent GmbH	2007		EP 1719193 A	HCAPLUS
Merck Patent GmbH	2007		CN 1943056 A	HCAPLUS
Merck Patent GmbH	2007		WO 2005083812 A	HCAPLUS
Merck Patent GmbH	2007		US 20070290194 A1	HCAPLUS
Merck Patent GmbH	2007		JP 2007527119 A	
Merck Patent GmbH	2007		AT 392720 T	HCAPLUS
Ricoh Co Ltd	2003		JP 2003318196 A	HCAPLUS
Semiconductor Energy La	2006		KR 1020060103241 A	
Semiconductor Energy La	2006		CN 1855570 A	HCAPLUS
Semiconductor Energy La	2006		US 20060214160 A1	HCAPLUS
Semiconductor Energy La	2006		JP 2006303459 A	HCAPLUS
Toyo Ink Manufacturing	2007		JP 2007103819 A	HCAPLUS

L41 ANSWER 2 OF 3 HCAPLUS COPYRIGHT 2009 ACS on STN

AN 2008:1317026 HCAPLUS Full-text

DN 150:85579

TI Horizontal molecular orientation in vacuum-deposited organic amorphous films of hole and electron transport materials

AU Yokoyama, Daisuke; Sakaguchi, Akio; Suzuki, Michio; Adachi, Chihaya

CS Center for Future Chemistry, Kyushu University, 744 Motooka, Nishi, Fukuoka, 819-0395, Japan

SO Applied Physics Letters (2008), 93(17), 173302/1-173302/3
CODEN: APPLAB; ISSN: 0003-6951

PB American Institute of Physics

DT Journal

LA English

AB Using wide-range variable angle spectroscopic ellipsometry, the authors demonstrate large optical uniaxial anisotropy of vacuum-deposited organic amorphous films of hole and electron transport materials having long or planar mol. structures. The ordinary refractive indexes and extinction coeffs. were higher than the extraordinary ones, revealing that the mols. in the amorphous films are horizontally oriented. The horizontal orientation requires significant modifications in the understanding of both the elec. and optical characteristics of amorphous films when the authors use materials having long or planar mol. structures. (c) 2008 American Institute of Physics.

IT 697234-81-4 858127-30-7

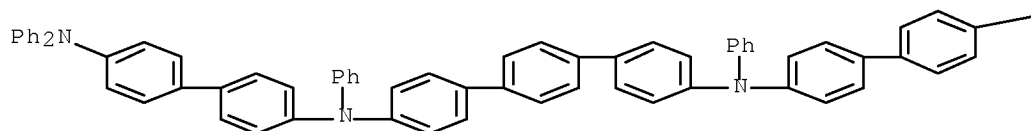
RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)

(horizontal mol. orientation in vacuum-deposited organic amorphous films of hole and electron transport materials)

RN 697234-81-4 HCAPLUS

CN [1,1':4',1''-Terphenyl]-4,4''-diamine,
N4,N4''-bis[4'-(diphenylamino)[1,1'-biphenyl]-4-yl]-N4,N4''-diphenyl- (CA INDEX NAME)

PAGE 1-A

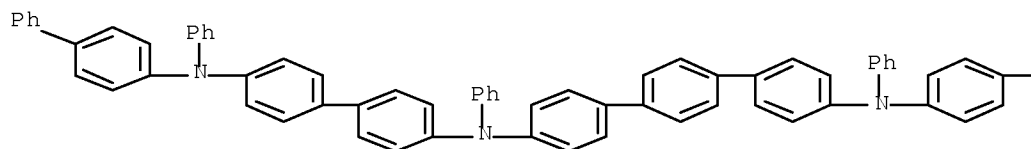


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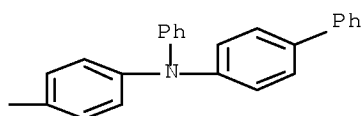
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RN 858127-30-7 HCAPLUS
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 N4,N4''-diphenyl- (CA INDEX NAME)

PAGE 1-A



PAGE 1-B



RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Adachi, C	1989	55	1489	Appl Phys Lett	HCAPLUS
Adachi, C	1995	66	2679	Appl Phys Lett	HCAPLUS
Adachi, C	1988	27	L269	Jpn J Appl Phys, Par	HCAPLUS
Aonuma, M	2007	90	183503	Appl Phys Lett	
Bettenhausen, J	1997	82	4957	J Appl Phys	HCAPLUS
Brutting, W	2001	2	1	Org Electron	HCAPLUS
Collins, R	1998	313-3	18	Thin Solid Films	HCAPLUS
Fox, T	1950	21	581	J Appl Phys	HCAPLUS
Hamada, Y	1992	31	1812	Jpn J Appl Phys Part	HCAPLUS
Ichikawa, M	2006	16	221	J Mater Chem	HCAPLUS
Ichikawa, M	2007	1	R37	Phys Status Solidi (HCAPLUS
Jellison, G	1993	234	416	Thin Solid Films	HCAPLUS
Kido, J	1993	32	L917	Jpn J Appl Phys, Par	HCAPLUS
Kijima, Y	1999	38	5274	Jpn J Appl Phys Part	HCAPLUS
Kuwabara, Y	1994	6	677	Adv Mater (Weinheim,	HCAPLUS
Lin, H	2004	95	881	J Appl Phys	HCAPLUS
Murata, H	2002	80	189	Appl Phys Lett	HCAPLUS
Nakada, H	1994	43	2450	Polym Prepr Jpn	
Salbeck, J	1997	91	209	Synth Met	HCAPLUS
Tang, C	1987	51	913	Appl Phys Lett	HCAPLUS
Tokito, S	1997	70	1929	Appl Phys Lett	HCAPLUS
Vanslyke, S	1996	69	2160	Appl Phys Lett	HCAPLUS
Yokoyama, D	2008	103	123104	J Appl Phys	
Yokoyama, D				Org Electron in pres	

L41 ANSWER 3 OF 3 HCAPLUS COPYRIGHT 2009 ACS on STN

AN 2007:546844 HCAPLUS Full-text

DN 147:176522

TI Material design of hole transport materials capable of thick-film formation in organic light emitting diodes

AU Aonuma, Masaki; Oyamada, Takahito; Sasabe, Hiroyuki; Miki, Tetsuzou; Adachi, Chihaya

CS Department of Photonics Materials Science, Chitose Institute of Science and Technology (CIST), Chitose, Hokkaido, 066-8655, Japan

SO Applied Physics Letters (2007), 90(18), 183503/1-183503/3
CODEN: APPLAB; ISSN: 0003-6951

PB American Institute of Physics

DT Journal

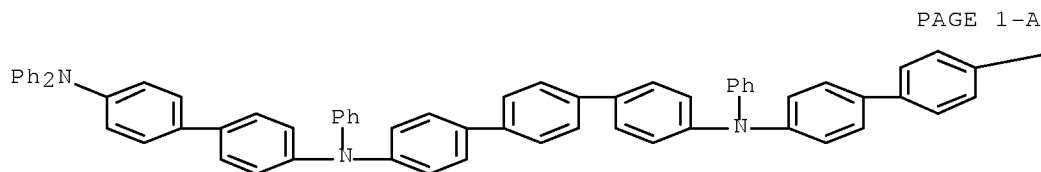
LA English

AB The authors show an empirical guideline for designing hole transport materials (HTMs) that suppress rises in driving voltage even with a few hundred nanometer thick film in the organic light emitting diodes (OLEDs). In a device structure of In Sn oxide (110 nm)/hole transport layer (HTL) (X nm)/4,4'-N,N'-bis[N-(1-naphthyl)-N-phenyl-amino]biphenyl (10 nm)/tris-(8-hydroxyquinoline)aluminum (Alq3) (50 nm)/MgAg (100 nm)/Ag (10 nm), the authors compared electroluminescence characteristics of the OLEDs having a thin-film HTL (X = 50 nm) and a thick-film HTL (X = 300 nm) using 13 kinds of HTMs. They observed a closed correlation between suppression of the driving voltage and the HTMs' thermal characteristics. Highly thermally stable HTMs resulted in a small increase in the driving voltage.

IT 697234-81-4 858127-30-7
RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(material design of hole transport materials capable of thick-film formation in organic light emitting diodes)

RN 697234-81-4 HCAPLUS

CN [1,1':4',1''-Terphenyl]-4,4''-diamine,
N4,N4''-bis[4'-(diphenylamino)[1,1'-biphenyl]-4-yl]-N4,N4''-diphenyl- (CA INDEX NAME)



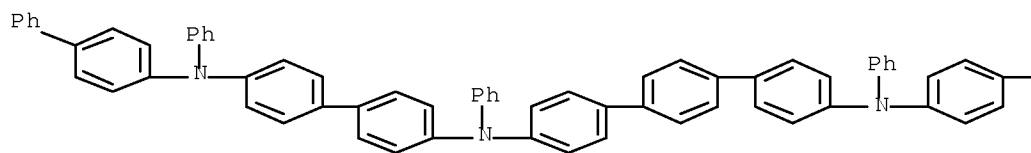
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PAGE 1-B

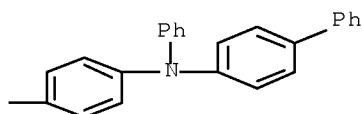
RN 858127-30-7 HCAPLUS

CN [1,1':4',1''-Terphenyl]-4,4''-diamine,
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N4,N4''-diphenyl- (CA INDEX NAME)

PAGE 1-A



PAGE 1-B



RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Blochwitz, J	1998	73	729	Appl Phys Lett	HCAPLUS
Brown, T	2003	93	6159	J Appl Phys	HCAPLUS
Chan, M	2003	82	1784	Appl Phys Lett	HCAPLUS
Endo, J	2002	41	L358	Jpn J Appl Phys, Par	HCAPLUS
Huang, J	2006	89	133509	Appl Phys Lett	
Jabbour, G	1997	71	1762	Appl Phys Lett	HCAPLUS
Kido, J	1998	73	2721	Appl Phys Lett	HCAPLUS
Oyamada, T	2003	42	L1535	Jpn J Appl Phys, Par	HCAPLUS
Parker, I	1994	75	1656	J Appl Phys	HCAPLUS
Tanaka, H	1996		2175	Chem Commun	HCAPLUS
Wakimoto, T	1997	44	1245	IEEE Trans Electron	HCAPLUS
Yamamori, A	1998	72	2147	Appl Phys Lett	HCAPLUS
Zhou, X	2001	78	410	Appl Phys Lett	HCAPLUS

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L4      467 S E3-E5,E9
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        E MAKOTO K/AU
        E TAKESUE/AU
L6      21 S E4,E6
        E ATSUSHI/AU

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 L8 15 S E3
 L9 119 S E30-E32
 E MITSUTOSHI/AU
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 E E16+ALL
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